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# Informing hospital design through research on patient experience

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**Abstract:** The material environment impacts on patients' wellbeing and healing process. In complex and hard-to-enter healthcare settings, architects and other designers have difficulty to collect information about patients' experience; hospital boards and facility managers experience difficulties to approach their familiar environment from a patient perspective. This paper explores how information on patient experience resulting from research in care contexts can be usefully and conveniently translated to designers and healthcare professionals. This should support the development of spaces, products and/or services that seek to improve patient experience. Case studies explore what different stakeholders expect to gain from information on patient experience and how it can be provided in the most valuable way. How the information is presented turns out to be key in how it is used. So far the format was custom-made for each specific case. Further research should investigate how the available experiential information can be disclosed to a wider audience.

**Keywords:** Case Studies, Healthcare, Hospital Design, Information format, Patient experience

# 1. Introduction

To be able to think of and realise well-designed environments, products, services, and processes in the healthcare sector, those involved in the design processes need to understand how the experience of the most vulnerable users – the patients – is affected by their specific state of mind – being stressed, feeling sick or nervous, and staying in an often unfamiliar environment. While truly placing oneself in someone else's shoes is hardly possible, being aware of this and making design decisions based on the best available information is. Providing nuanced and easily accessible information from research on patients' experience of hospital environments could raise different actors' awareness of the gap between the experience of various profiles involved in (the design of) healthcare environments. The aim of this paper is to explore how experiential information (video recordings, pictures, interviews, …) resulting from research in care contexts can be translated to

designers (architects, product and service designers) and healthcare professionals in a useful and convenient manner. The use of this information should allow them to develop or adapt spaces, products, and services that impact on patients' and other users' experience. To study this translation in an adequate way, case studies are set up in close collaboration with designers and hospital boards. In these case studies the available experiential information is analysed in terms of its relevance and the format in which it is presented is evaluated. Insights gained in this way are on a regular basis presented and discussed with a broader group of facility managers, and designers. The case studies allow us to present concrete, relevant, and practically applicable examples of the benefits of using experiential information in the design of healthcare environments.

# 2. Background

Various studies show that the designed environment – products, services, and spaces – has a significant impact on patients' wellbeing and as such can add to their healing process (Ulrich et al., 2008; Huisman et al., 2012; Desmet & Pohlmeyer, 2013). Most product and service designers, architects, and hospital boards are convinced of this impact but often lack accessible information that offers a nuanced insight into patients' experiences. Ideally this information is obtained through interaction with real users, allowing designers to develop a more thorough understanding of and empathy with them (McGinley & Dong, 2011). However, since time and money restrictions in a typical design process very often result in a minimal user engagement (Cassim, 2010), designers are unable to obtain this direct input from users and become dependent upon indirect sources of human information (McGinley & Dong, 2011).

As designers do not always have direct contact with the people they are designing for, various techniques – like target-group and context analysis, scenarios, personas, participatory & co-design workshops- have been developed to bring them closer to these people's experience (Kouprie & Visser, 2009; McGinley & Dong, 2011; van Rijn et al., 2011). Most of these techniques aim to foster empathy. People's specific situation affects the degree to which actual interaction can be achieved. In the case of vulnerable groups like hospital patients, practical and ethical restrictions make it hard for designers to actually engage with them.

In previous research, we collected insights regarding various aspects impacting on patients' experience (Annemans et al., 2016, 2017; Van der Linden, Annemans & Heylighen, 2016; Van Steenwinkel, Verstraeten & Heylighen, 2016). This information consists of ethnographic data collected in various (health)care settings, both hospitals and (residential) care facilities. These could provide hospital boards and designers with much of the needed information to gain insight into patients and residents' experience and start empathising with them. Yet the scientific articles, in which this research is mostly presented, are not the number one source where designers look for information (Annemans et al., 2014). Possible explanations for this are that designers are rather motivated by visual communication and like information to be presented graphically (Lofthouse, 2006) or that they often feel mistrust towards data that have already been interpreted (Restrepo, 2004). They prefer raw data in a format that is condensed down to be design-relevant (McGinley & Dong, 2011).

# 3. Case study approach

## 3.1 Study design

The project reported on in this paper aims to gain insight into both the content and format needed to usefully and conveniently translate experiential information resulting from research in care contexts to designers and healthcare professionals.

The study design is set up as a multiple case study enquiry. A case study is defined as the study of a case (person, place, event), selected for its particularity, and 'bounded' by physical, temporal, social/cultural, and conceptual features. Case studies are the preferred strategy to gain an in-depth understanding of a contemporary phenomenon in a real-world context (Yin, 2012; Flyvbjerg, 2006). Their main strength is depth — detail, richness, completeness and within-case variance.

In the context of this project, a case is defined as “a design issue in the healthcare context”, being either a question raised by a hospital board with regard to their current or future (designed) environment or an issue involving patient experience in a design process.

## 3.2 Case studies

In this paper, we report on four case studies conducted as part of the project, two induced by questions from hospital boards, two initiated from a designer perspective.

The first case study with a hospital board took place at a local hospital confronted with severe wayfinding problems amongst patients and visitors. The hospital board aimed to gain insight into the origin of the wayfinding problems and to formulate concrete solutions for it. We organised three workshops with hospital staff with diverging functions, providing them with different techniques to obtain these goals. In a first session, the making of personas was introduced to confront the participants with some specificities of patients’ experience - being nervous, unfamiliar with the building and the signage. They were asked to explore different routes through the building from a patient perspective in small groups and document the route they followed by taking pictures. In a follow-up session, they were presented information from previous research on wayfinding through a structured webpage which provided theoretical concepts on wayfinding, illustrated by patients’ testimonies of how they experienced wayfinding and by photo and video material showing patients moving through a hospital. Participating staff was then asked to match the pictures of the route they followed with the concepts. As such bottlenecks in the wayfinding system were identified. Finally, the group developed strategies to solve certain problems based on their enhanced understanding of patients’ spatial experience.

In a second case study in another hospital, the hospital board did not want to address an existing situation but aimed to gain insight into how, in the future, they could use technological devices to inform patients and how this would impact on their waiting experience. A new ambulatory centre, currently under construction, has been designed with a large common waiting area where patients would be tracked and informed through technological devices. To collect information on this, we set up three workshops that started with a hands-on activity in which voluntary patients were asked to act out different waiting scenario’s (waiting in small or large areas, with or without information) while being informed through mock-ups of different devices (public screens, a smart phone, or a pager). During the second part of each workshop, participants’ experience was discussed in a focusgroup interview. The results from these workshops were analysed and communicated to the hospital management.

The first case with designers was conducted within an architecture firm working on the design of a new hospital building. In this context, they wanted to profoundly update their knowledge on hospital organisation. To do this in a carefully thought out manner, they needed criteria to judge information on the trustworthiness of its content and its relevance for architectural design. We provided them with a framework to collect, analyse, and evaluate literature in terms of scientific value and relevance for architectural practice. This yielded insight into how and why (scientific) literature is used by designers.

As a second case with designers, we organised a workshop at the Design Research Society (DRS) Conference 2016 . Conference participants could subscribe to take part in a workshop aiming to provide insight into the impact of information formats on design processes and outcomes. Participants –one professional designer, four design researchers, and one psychologist– were asked to design a hospital bed, focusing on the role of products and services in patients' experience of (health)care environments. Three groups participated in the workshop, each of these groups was initially provided with a webpage showing different information formats – video with quotes from patients, a research paper, and user requirements – to design a hospital bed that would improve patient experience. Later, each group could use all available information formats to adapt their designs. The approaches and outcomes of the design processes were discussed with all participants.

## 3.3 Analysis

For each case study, the material participants generated during the workshops or while working independently was collected. (Focusgroup) interviews were audio recorded. We then made content logs or full transcriptions of the recordings depending on the further steps agreed on with the participating organisation. After each session, a short report was written addressing its strengths and weaknesses. All of this was then analysed keeping in mind three questions:

- Motivation: What was participants' (hospital board or designers) motivation to take part in the case study? What was their information need?
- Information need: What (type of information) did they need to reach their goal?
- Information format: How would they like to be provided with the information needed?

# 4. Findings

By conducting case studies with hospital boards and designers we seek to obtain a better understanding of why experiential patient information would be used, what each of them consider relevant substantively and how they would like to consult it. Answering these questions will help to identify how information on patient experience resulting from research in care contexts could be translated to the design and healthcare sector.

## 4.1 Motivation

Different organisations had different motives to take part in the project and formulated a case study relevant to their situation. Whereas not all hospital staff members in the wayfinding case believed in the added value of incorporating insights into patient experience to improve the wayfinding system, the designers taking part in the conference workshop were convinced of the necessity to have a good understanding of patients' experience to be able to design an improved healthcare environment. Also for the architects it was beyond doubt that they would try to find as much information on patient experience as possible to support and justify their design decisions.

Although participants in the case studies conducted with hospital boards would be expected to stand relatively close to patients, in both cases gaining insight into patients' experience appeared to be challenging. In the wayfinding case, we found that enhancing empathy amongst staff was needed as a first step to enable them to identify bottlenecks in the current wayfinding system and formulate solutions from a patient perspective. Although those taking the initiative for the case study with the other hospital were convinced of the importance of consulting patients, they clearly needed support to gauge patients' experience before being able to think about new possibilities. For the designers thinking about improvements of patients' environment through insight into their experience was rather obvious. Yet, the case studies did not aim to collect first-hand data on patient experience but rather focused on putting it to use.

## 4.2 Information need

When reflecting on the workshops, participants in the wayfinding case study, who had been presented with a variety of information, explicitly mentioned the lack of best practices, i.e. examples of good architectural solutions. Although the presented information, combining theoretical concepts with visual material and narratives on patients' wayfinding experience helped participants to analyse the existing situation, they felt that it did not support them in finding solutions for the problems they were facing. They would have preferred clear-cut solutions which they believed they would find in best practices. They did not seem to be eager to interpret the information themselves. A similar sentiment could be recognized at the other hospital. There too, those in charge of decision-making asked for straightforward and applicable information ready to be used. Although being informed about patients' experience was valued, making the connection with the concrete environment seemed to be appreciated even more.

The case studies conducted with designers showed a different information need. Both the architects and the designers participating in the workshop expressed their preference for making their own selection of what to use from the offered information rather than being provided with solutions. They highly valued the richness and variety of the offered information, although as the case study with the architecture firm showed, they needed some guidance on how to filter, collect, and evaluate the information. Since the workshop participants were provided with a selection of information made by the researchers, they did not express this need. However, they too mentioned that they appreciated having trustworthy information on patient experience, something that is hard to gain access to in daily design practice.

Apart from the explicit information need mentioned by hospital boards and designers, we also identified a need for information that seemed to have a more implicit value. Although the participants in the wayfinding case study did not mention the theoretical background during the subsequent workshops, we noticed that the offered concepts were being used as a common vocabulary between the hospital staff, not used to sit together and discuss this kind of subject. Also in the focusgroup interview with patients organised as part of the case study on waiting, and in the case studies with designers we noticed that certain concepts we, as researchers, use were picked up by participants and formed a basis for discussion.

## 4.3 Information format

The participants in the wayfinding case study, who were offered experiential information through a website, preferred the video material as information source and frequently referred to it throughout the workshop. An important advantage of the videos (combined with a textual explanation) seems to be the opportunity to offer nuanced insights in a compact way. The workshop with designers pointed

at the consequences of opting for either type of information format. Those designing informed by video recordings clearly focused more on the moving aspect of experience than others who based their design on textual or static visual information.

Whereas the participants in the wayfinding case study stressed the value and necessity of concrete assignments accompanying the information provided through the webpage, designers appreciated the opportunity to consult easily accessible experiential information without strict guidance on how to use it. Being able to make their own decisions on what to apply where, and when in their designs was considered an advantage. This does not mean that designers did not need guidance in working with experiential information. Yet, this need is more related to judging and evaluating available information. A website or database providing information that is reliable would thus likely meet their needs.

# 5. Discussion and concluding remarks

Based on the case studies presented above, we explored how experiential information resulting from research in care contexts could be translated to healthcare professionals and designers in a useful and convenient manner. The former experience difficulties to approach the environment they are familiar with from a patient perspective. The latter have difficulties to collect information about patients' experience on site especially in complex and hard-to-enter environments like healthcare settings. Whereas it was expected that hospital boards would be most interested in methods to explicate patients' experience, it appeared they were more interested in ready-to-use information on patient experience than in how to collect it. Designers on the other hand, valued broad and nuanced information, giving them the opportunity apply it to a concrete design. What they longed for were methods or guidance to obtain this information, being it from literature or by taking part in a design workshop like the one we organised.

The conference workshop with designers pointed at the consequences of opting for a specific type of information format. Those designing informed by video recordings clearly focused more on the moving aspect of patient experience than others who based their design on textual or static visual information. This observation draws attention to the impact of the information format on the design outcome, an issue relevant to designers, hospital board in charge of writing design briefs, and researchers alike. Raising awareness on this impact could be a first step in pointing out the relevance of broad and nuanced information handed under various forms and through various techniques. The interest of designers in the impact of information on the design process stands in stark contrast with hospital boards' request for straight applicable information and clear-cut solutions.

Each case study conducted so far focused on a specific information need and situation. Both content and format were adapted to what we were required to provide information on. Bringing the insights from the various case studies together will be challenging. Substantively, it will be difficult to truly span the broad range of all aspects adding to patients' experience. As the format in which the information on patient experience is presented turns out to be a key issue in how it is used, it will be important to guard that those consulting the offered experiential information can do so under various formats, to obtain the nuanced understanding that we want to communicate.

Overall the presented case studies were evaluated by the participating professionals as eye-opening and relevant. Yet, as stated above each case study was situation-specific, which may have added to this overall positive evaluation. Further research is needed to investigate how the available experiential information can be disclosed to a wider audience, considering the divergent needs of different stakeholders regarding content and format.

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